M1-D MANUAL

REVISION 1.3.2

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1. SAFETY NOTES – IMPORTANT

The following safety precautions must be followed carefully. Please take the time to review the entire manual before operation.

Before installing the M1-D camera system please read this manual carefully and familiarize yourself with its features and operations.

The installation of the M1-D must be performed by qualified service or system integrators and shall comply with all local codes.

Before powering on the camera verify the power voltage, current and polarity are correct.

Route the power, video and control cables in an appropriate manner to avoid damage to the cable. Make sure the cable is not a trip hazard.

Do not operate the camera outside of the systems specified environmental range. The M1-D's working temperature range is -25°C - 70°C. The ambient humidity limit is <95% non-condensing.

During transportation avoid violent shock and/or vibration to the camera system.

To prevent electric shock and avoid permanent damage to the M1-D, do not remove any screws or attempt to disassemble the system housing. There are no user serviceable parts inside. Contact SPI Corp for service at 702-369-3966.

Video and RS-485 control cables should be separated from other cables. Shielding may be necessary in some cases to avoid interference.

NEVER aim the lens of the M1-D at the sun or extremely hot objects. This may damage the precision thermal sensor.

To clean the M1-D use a soft cloth. For extreme dirt utilize a weak solution of water and household dish soap. Use only quality lens care tissue or lens cloth to wipe the windows of the M1-D.

Do not rotate the camera housing manually. Do not hold the camera module while in operation or try to stop the rotation while in operation. This may result in a malfunction of the camera.

Shield the camera from radiation, X-Ray, Radar or other strong electro-magnetic sources.

2. ABOUT THE M1-D

The M1-D is an intelligent Pan Tilt Zoom multisensor imaging platform designed for all weather operation on a variety of platforms. The M1-D is ideally suited for Vehicle, Vessel or stationary mounting configurations. The M1-D features a thermal day/night sensor, a visual light CCD sensor and a laser indicator. The M1-D PTZ is remotely controlled via optional accessory keyboards or via user supplied devices that communicate via RS/485 utlizing the Pelco-D protocol.

2.1 Features

- Fully weatherized housing for outdoor operation, anti-vibration, anti-corrosion IP66 rated.
- Thermal imaging sensor for detailed imagery in any lighting condition.
- CCD Visual sensor for target identification.
- Laser indicator for team security and object tracking.
- Continuous 360° pan with 90° tilt range.
- 12VDC operation with vehicle cigarette lighter support.
- User adjustable preset positions with auto tour.
- Digital Zoom.
- Compact 4.5” gimbal ball design with a light weight of approximately 2 lbs. for easy integration into a variety of platforms.

2.2 Functions

Thermal Imaging Sensor

The M1-D is equipped with a next generation LWIR (Long Wave InfraRed) thermal imaging sensor operating in the 8-12 micron wavelength. This sensor “sees” heat energy not light. This unique capability allows you to visualize the world around you regardless of ambient lighting.

Visual CCD Sensor

The M1-D is equipped with a visual imaging sensor that sees in the visual light spectrum. This sensor is ideally suited for object identification and for reading vehicle tags, ship or aircraft numbers.

Laser Indicator

The M1-D is equipped with a red dot visible light laser pointing device. The laser can be triggered to pin point areas of interest to other personal working together as a team.

Thermal Zoom

The M1-D incorporates the latest in Digital thermal zoom technology. The zoom level can be triggered from the remote control and increases awareness by factors of 2x, 4x, 8x (depending on model).

Inverted Operation

The standard orientation for the M1-D is in the upright position with the base plate resting on a surface below (such as a vehicle roof). The system is capable of inverted operation wherin the base plate is mounted above (such as in a UAV or Aircraft). Inverted operation must be ordered from the factory. Please contact SPI CORP 702-369-3966 to switch to inverted operation.

Auto Tours

The M1-D can be configured to automatically scan between selected preset stops. The user defines the stops so that you can set the system to continuously scan certain areas of interest. In addition the M1-D can be setup to automatically pan 90°, 180° or 360°.

On Screen Display Symbology

The M1-D has a variety of user adjustable on screen display symbols that greatly aid in scene visualization. The symbology includes multiple crosshairs (boresightable to the laser indicator), zoom FOV indicators, pan position indicator, user input text string, laser firing indicator and logos. The symbology is controlled via the onscreen menu system.

2.3 Technical Specifications

	160x120	320x240	640x480
Thermal Performance			
Detector	Microbolometer Long Wave InfraRed		
Resolution	160x120	320x240	640x480
Spectral Response	8-12 microns (LWIR)		
Thermal Optics	19mm or 25mm	19mm or 25mm	19mm or 25mm
19mm FOV	12° HFOV	24° HFOV	32° HFOV
25mm FOV	9° HFOV	18° HFOV	25° HFOV
Visual Performance			
Sensor	1/3” CMOS		
Resolution	520 TV Lines		
FOV	20° HFOV		
Pan Tilt			
Pan Range	360° Continuous Rotation		
Tilt Range	90° Tilt Range		
P/T Speed	PAN:0.05o~240o/sec;TILT:0.03o~160o/sec		
Auto Cruise	1-39 preset positions scan in sequential order		
Pattern Scans	4 programable routes.		
Presets	Up to 100		
Interface			
Video	Single channel NTSC		
Communication	RS/485 2400bps Pelco-D protocol		
Environmental			
Size	4.5” Gimbal (130mm x 116mm x 163mm)		
Weight	2lbs. (19mm system)		
Operating Temp.	-25°C to +60°C		

3. INSTALLATION

This section contains basic installation instructions for the M1-D multi sensor system. Since the M1-D is designed to be mounted on a wide range of vehicles, vessels and aircraft we cannot cover every installation scenario possible. This guide offers the basic instructions for installation in common applications. Qualified installation personnel in accordance with all local and federal codes should carry out all installations.

3.1 Dimensional Views

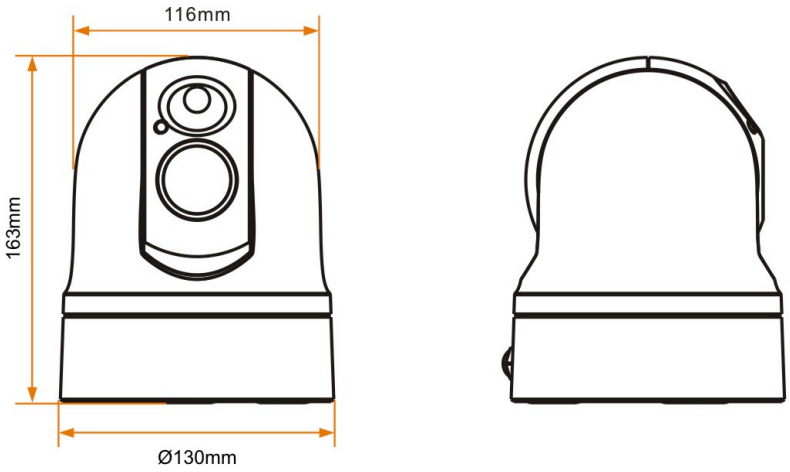


Fig. 1 Outer dimensions (no stabilization plate)

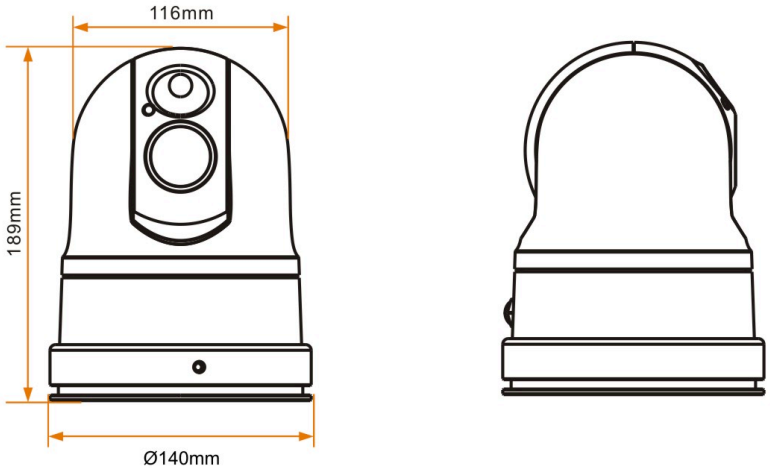


Fig. 1.2 Outer Dimensions (with stabilization plate)

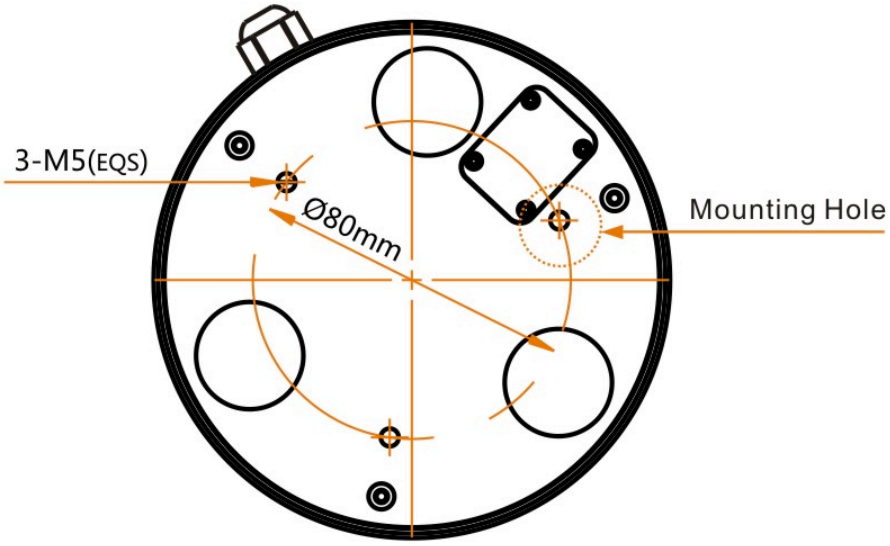


Fig. 1.3 Bottom mounting holes and magnets.

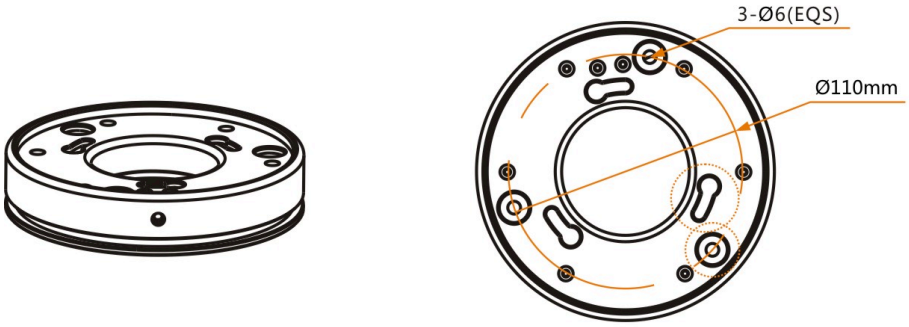


Fig. 1.4 Stabilization plate mounting holes

3.2 Mounting The M1-D

First you must decide if the M1-D is to be mounted in the standard upright position or inverted. In order to mount the unit inverted you must specify inverted operation at time of order or send the unit back to SPI Corp for modification. Inverted operation is normally associated with UAV usage when mounted to the bottom of Aircraft. M1-D is not aircraft certified.

The M1-D comes standard with a high strength magnetic base mount consisting of three high power magnets embedded into the base of the unit. These magnets are suitable for mounting the M1-D on metallic surfaces (such as a vehicle roof) for on road use in non violent conditions. For a more permanent mount or for use in extreme motion environments you will want to use the bolt holes on the bottom of the unit to affix the M1-D to a bracket (of your own fabrication). SPI Corp offers a vibration mitigation stabilization plate which also acts as a hard mounting plate for the M1-D. Contact SPI Corp at 702-369-3966 to purchase this accessory.

Mounting Steps

1. Find a suitable flat location that is free from obstruction on all sides. You will want this area to be parallel with the ground so as not to skew the image as you pan. Make sure that the area is firm and not flexible since flexing of the mounting surface will cause jitter in the video image during use.

2. If using the magnetic mounts carefully tilt the M1-D into position. DO NOT PINCH YOUR FINGERS. The magnets will grab with some force.

3. If using the mounting holes first mount the M1-D to your mounting fixture then mount the fixture to your surface. We recommend fabricating a “spider” type bracket that extends out beyond the edge of the M1-D *(see Fig. 1.4.1).* If you have access to the underside of your mounting platform you can mark and drill holes to mount your bolts through the mounting plate and up into the bottom of the M1-D.

4. Route the main system cable into the vehicle or other protected area. Be careful to not put undue strain on the cable or bend the cable severely.

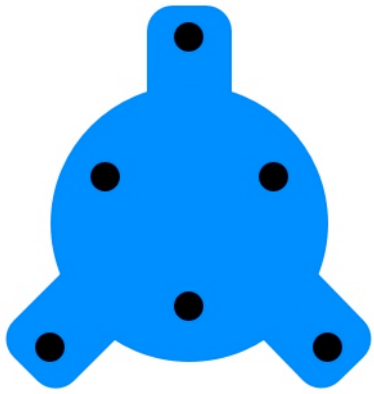


Fig. 1.4.1 Sample spider mount design. Not to scale.

3.3 Electrical Connections

The M1-D operates on 12VDC power typical of most vehicles. The M1-D is a negative ground system so verify that your vehicle outputs the correct voltage and polarity. The M1-D outputs standard NTSC video signal and responds to commands via 2 wire RS/485 serial interface utilizing the Pelco-D protocol at 2400bps. Electrical connections should always be performed by qualified personel in accordance with local and federal codes.

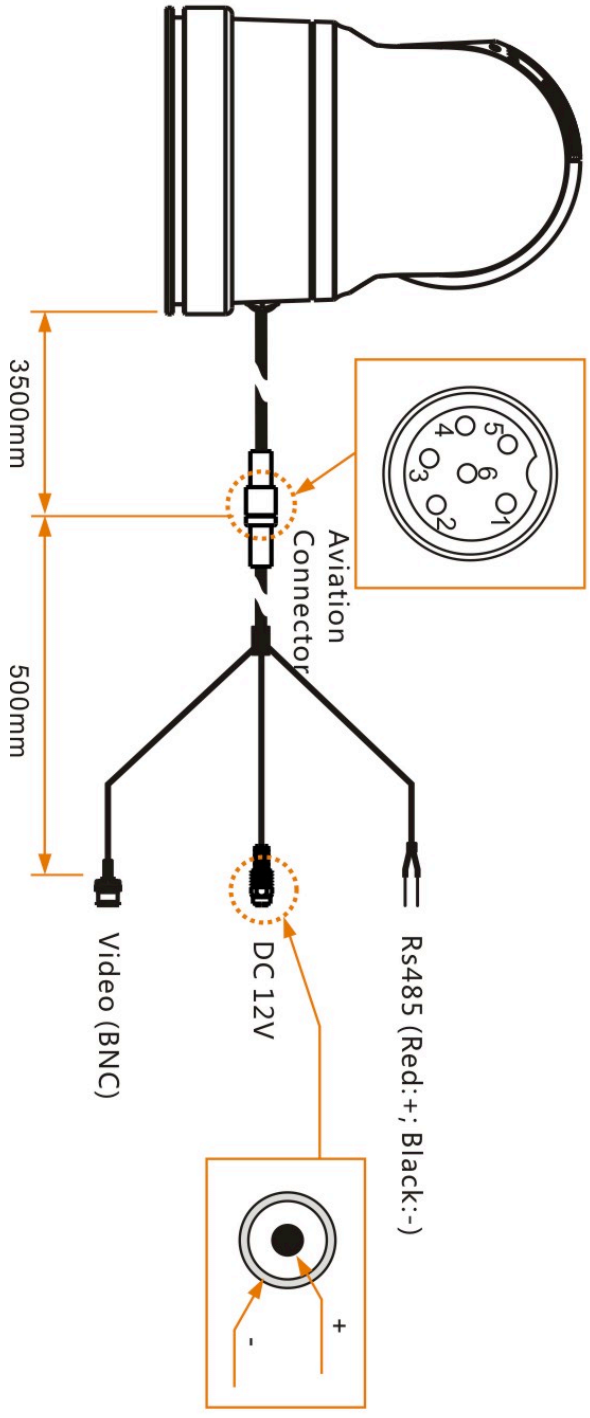
Electrical Steps

1. Review Electrical Connections Overview Diagram (Fig. 1.6)
2. Route main system cable into protected area.
3. Connect the pigtail cable extender (Fig. 1.5) to 12VDC power. The included pigtail cable extender utilizes a phono plug type connector and includes a cigarette lighter adapter. For more permanent installation this connector can be cut off and hard wired to the vehicle. OBSERVE POLARITY OR SYSTEM DAMAGE WILL OCCUR. CONSULT A QUALIFIED ELECTRICIAN.
4. Connect the RS/485 cables to the appropriate port of your controller. The RS485 leads are red and black in color. The red wire is RS485 + and the black wire is RS485 -.
5. Connect the BNC video plug to a suitable NTSC video monitor.
6. Connect the pigtail cable extender to the main system cable. The unit will power on when this connection is made.

There is no ON/OFF switch on the M1-D main system cable. The system is powered off by removing power from the cable or disconnecting the M1-D pigtail cable extender from the main cable. To install a dash mounted or other power switch make your connection or relay in line with the 12VDC power connections after the pigtail cable extender.

Fig. 1.5 Pigtail Cable Extender.

Electrical Connections Overview Diagram Fig. 1.6



4. OPERATION

This section contains the information required to operate the M1-D mult-sensor pan tilt zoom system. Please read and familiarize yourself with the entire manual before operating the M1-D system.

4.1 Basic Operation

The M1-D multi sensor pan tilt zoom system is comprised of the following subsystems.

1. Thermal infrared imaging sensor with dgital zoom and fixed focus optics.
2. Visual light CMOS sensor with focus free optics.
3. Laser pointer
4. Pan Tilt remote controlled positioning housing.

The M1-D is a remote controlled imaging system that provides the user with thermal imaging video, daytime video and laser pointer technology. The system is controlled via joystick or keyboard controls allowing the user to operate the system remotely.

Pelco-D Specialty Command Mapping

The various subsystems are controlled via buttons on standard Pelco-D compliant controllers, DVR's or computer software. Special commands exclusive to the M1-D are mapped to specific Pelco-D commands in order to maximize compatiblitiy. The M1-D uses the following Pelco-D commands to directly access specialized features of the system.

IRIS OPEN – The [IRIS OPEN] command (typically labelled as [OPEN] on keyboard controllers) is used to control the thermal imaging sensor zoom.

IRIS CLOSE – The [IRIS CLOSE] command (typically labelled as [CLOSE] on keyboard controllers) is used to control the thermal imaging sensor color palletes.

FOCUS FAR – The [FOCUS FAR] command (typically labelled as [FAR] on keyboard controllers) is used to activate the laser pointer.

FOCUS NEAR – The [FOCUS NEAR] command (typically labelled as [NEAR] on keyboard controllers) is used switch between the visible and thermal imaging sensors.

Power On the M1-D

To power on the M1-D you need to connect power to the system by plugging in the cigarette lighter vehicle adapter. If you have installed a remote power switch use that to turn on the system. Once turned on the M1-D will begin its self test routine. You will see the unit spin and tilt as it runs the self test. Once it stops moving the M1-D will be ready for operation.

Pan Tilt The M1-D

Using a joystick controller you can remotely position the M1-D in the pan and tilt access by using the joystick on your control keyboard. Pushing the joystick to the right will cause the unit to pan to the right. Pushing the joystick up will cause it to tilt upward. You can invert these operations with a special menu command (see Advanced Settings Menu Preset Commands).

Select Video Source

The M1-D has both a thermal imaging sensor and a visual light sensor. Video is output from the M1-D via a single video line. By sending a command to the M1-D you can switch between the

visual video and the thermal imaging video being output on the M1-D video output line. To switch between thermal imaging and visual video use the FOCUS NEAR command (typically labelled [NEAR] on keyboard controllers). Each time you push the button it sill switch between visual and thermal video.

Trigger The Laser Pointer

The M1-D has a visible light red dot laser pointer integrated into the system. WARNING LASER RADIATION EMITTED FROM THE FRONT OF THE SYSTEM. DO NOT FIRE LASER WHEN ANY PERSON IS STANDING IN FRONT OF THE SYSTEM. DO NOT LOOK INTO LASER APERATURE. DO NOT FIRE LASER AT ANY PERSONS FACE. The laser is triggered using the FOCUS FAR command (typically labelled [FAR] on a keyboard controller). The laser will fire only as long as you send the command (by computer or by holding the [FAR] button). While the laser is firing the word LASER will appear on screen in the top right corner. The cross hair symbology onscreen can be bore sighted to the laser for your individual application. Please see Advanced Symbology Menu Settings for more information.

Thermal Imaging Sensor Zoom

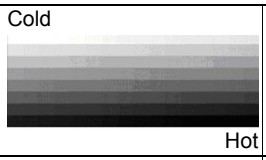
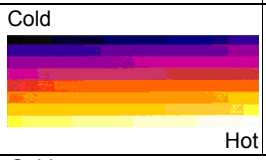
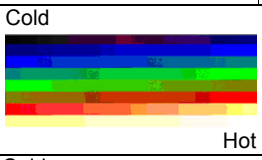
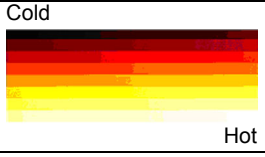
The M1-D has an electronic zoom on the thermal imaging video channel. You can cycle through the various zoom levels via the IRIS OPEN command (typically labelled [OPEN] on keyboard controllers). Each time you push the [OPEN] button the system cycles to the next zoom level. When you reach maximum electronic zoom the next push of the [OPEN] button returns to normal 1x no zoom imaging. The amount of electronic zoom is dictated by the thermal sensor inside the M1-D. The following outlines part number and corresponding sensor / zoom levels.

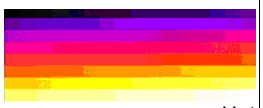
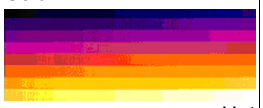
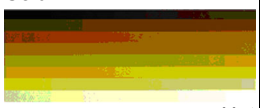
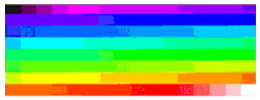
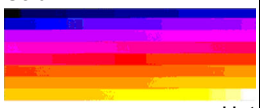
PART #	SENSOR	ZOOM
M1-D-XX-16	160X120	2X
M1-D-XX-32	320X240	2X, 4X
M1-D-XX-64	640X480	2X, 4X, 8X

Part # Sensor and Zoom level Table 1.3

Thermal Imaging Color Palletes

The M1-D thermal imaging sensor is a full color thermal imager capable of black and white and multiple thermal color profiles. You can cycle through the various color profiles in the thermal imaging sensor by pushing the IRIS CLOSE button (typically labelled [CLOSE] on keyboard controllers). Each time you push the [CLOSE] button the M1-D will cycle through color profiles until you get back around to the original black and white pallete. The following outlines the available color palletes and the order (color palletes may change this table is for reference only).

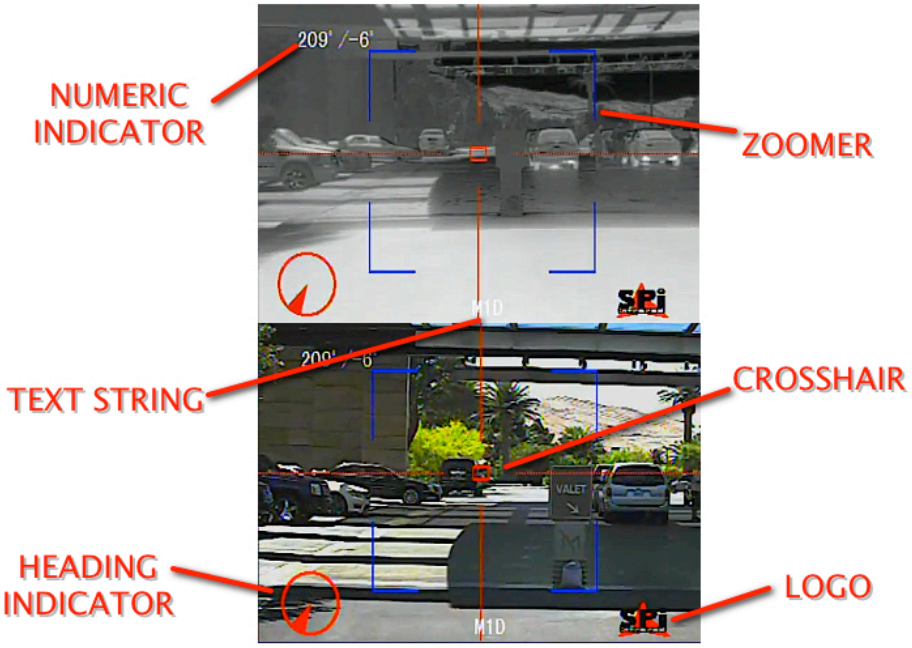
PALLETE	DESCRIPTION
WHITE HOT	
BLACK HOT	
FUSION	
RAINBOW	
GLOWBOW	

IRONBOW 1	Cold  Hot	
IRONBOW 2	Cold  Hot	
SEPIA	Cold  Hot	
COLOR 1	Cold  Hot	
COLOR 2	Cold  Hot	
ICE FIRE	Cold Hot	
RAIN	Cold Hot	
RED HOT	Cold Hot	
GREEN HOT	Cold Hot	

Pallette Description Table 1.4

4.2 Onscreen Symbology

The M1-D user interface screen contains a variety of useful symbology to aid in your mission. All symbology can be turned on or off based on user preference.



Heading Indicator

The heading indicator shows the position of the M1-D in the relative pan axis. The pie shaped symbol will rotate around the circle indicating the direction that the imaging sensors are pointing. Take care when installing the M1-D so that the heading indicator points to the front of the vehicle.

Numeric Pan Tilt Indicator

The numeric pan/tilt indicator reads out the position of the pan tilt unit in degrees. The pan rotation is the first number on the left and reads from 0-365 degrees. The tilt axis is the second nember and reads from -15 (down) to +90 degrees (up).

Cross Hairs

The M1-D is equipped with a number of user selectable cross hair symbols. These symbols fall into two main groups (moveable and fixed). Moveable cross hair symbols can be adjusted in the X, Y axis to align the cross hair with the laser pointer at a given distance (AKA Bore Sight the laser). Fixed cross hairs remain in the center of the image.

Zoom Indicators

The M1-D is equipped with zoom indicator lines that appear to the outer edge of the cross hairs. The zoom indicator lines help to give the operator a reference as to the field of view of the next zoom level. Objects that are within the zoom lines should remain within the zoom lines after the zoom button is pushed.

Logo

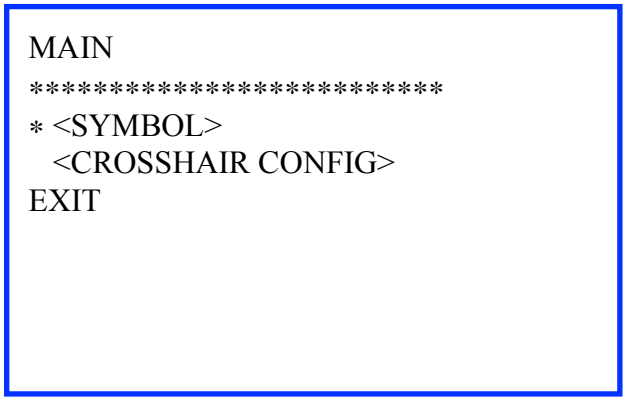
The M1-D displays the SPI Logo in the bottom right corner of the screen.

Text String

The M1-D gives the user the ability to input a custom text string that will be displayed on the screen. This is useful for labelling individual cameras in multiple camera setups.

Accessing The On Screen Display Menu

To adjust the settings of on screen symbology you need to access the OSD Menu (On Screen Display Menu). To access the OSD enter the Pelco-D command [CALL] + 99 + [ENTER] or [PRESET] + 99 + [ENTER]. Or 99 + [PRESET] or other variation depending on the setup of your keyboard. (For technical assistance contact SPI Corp 702-369-3966). Once you enter the OSD Menu you should have the following screen open.



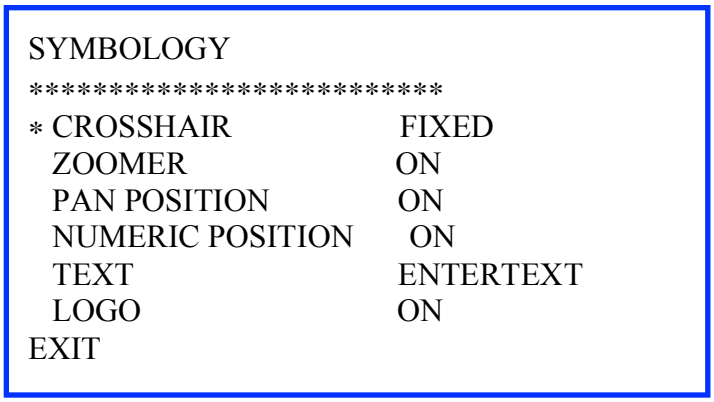
OSD Menu Main Fig. 2.0

Navigating The OSD Menus

To navigate through onscreen display (OSD) menus you utilize the joystick and keyboard buttons. The currently selected menu item is indicated by the presence of an asterisk (∗) symbol next to that menu item. To move to the next menu item you move the (∗) symbol up and down with the joystick. To select a menu item you push the IRIS OPEN (typically labelled [OPEN] on keyboard controllers). To change a menu selection use the joystick up and down commands. To back out of a menu option use the IRIS CLOSE command (typically labelled [CLOSE] on keyboard controllers).

Symbology OSD Menu

The symbology OSD Menu allows you to turn on or off the various symbology items available in the M1-D system. The symbology menu also allows you to select between Fixed and Moveable Crosshairs. When you access the Symbology OSD Menu you will see the following choices.



OSD Symbology Menu Fig. 2.1

Symbology Crosshair Menu

The crosshair symbology menu lets you choose between a fixed crosshain, adjustable crosshair or no crosshair. There are three choices [FIXED] [ADJUST] [OFF]. [FIXED] crosshair setting activates the last selected fixed crosshair.

[FIXED] crosshairs remain in the center of the image and cannot be moved. You can change the type of fixed crosshair in the CROSSHAIR CONFIGURATION MENU. [ADJUSTABLE] crosshairs can be boresighted to the laser or other devices as per your requirements. Adjustable crosshairs can be adjusted in the CROSSHAIR CONFIGURATION MENU. Selecting the Adjustable crosshair activates the last selected adjustable crosshair. You can select different adjustable crosshairs in the CROSSHAIR CONFIGURATION MENU. [OFF] Crosshairs turns all crosshairs off.

Symbology Zoomer Menu

The Zoomer Menu controls the zoom Field Of View indicator which gives you an indication of what the field of view will be when you activate the thermal zoom. Objects that are within these boundries should appear in image when zoom is activated. The Symbology Zoomer Menu lets you turn this feature on or off. You can select the type of zoomer in the CROSSHAIR CONFIGURATION MENU.

Symbology Pan Position Menu

The pan position menu lets you turn on or off the pan position indicator located in the bottom left corner of the screen.

Symbology Numeric Position Menu

The numeric position menu lets you turn on or off the numeric pan tilt position indicator in the top left corner of the screen.

Symbology Text Menu

The text menu give you the option to enter a custom text string to be displayed on screen. The text string is limited to 12 characters (A-Z and 0-9). The text menu has three options; [ENTERTEXT] [ON] [OFF].

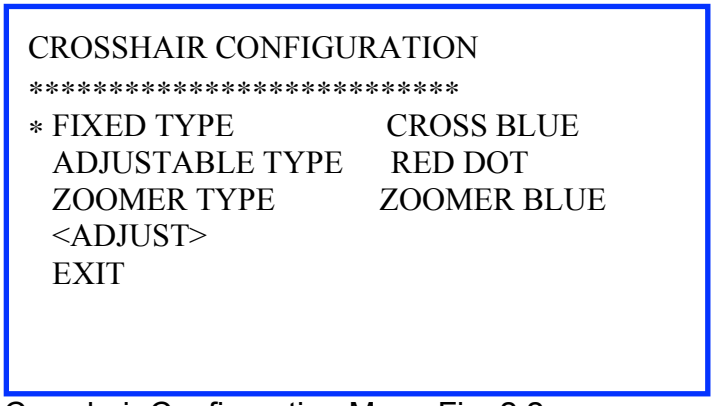
[ENTERTEXT] Allows you to enter the desired text string using the joystick keyboard controller. Select the desired character with the joystick and then press the [OPEN] button on the keyboard to select. To backspace and erase a character use the [CLOSE] button on the keyboard. When the desired text string is entered use the joystick to select SAVE AND EXIT then press the [OPEN] button to select and save. To cancel select the CANCEL AND EXIT option and press the [OPEN] button.
[ON] Turns on the text string entered in the ENTERTEXT menu so that it appears on screen.
[OFF] Turns off the text string.

Symbology Logo Menu

The symbology logo menu allows you turn the on or off the SPI logo embedded in the bottom right corner of the screen.

Crosshair Configuration Menu

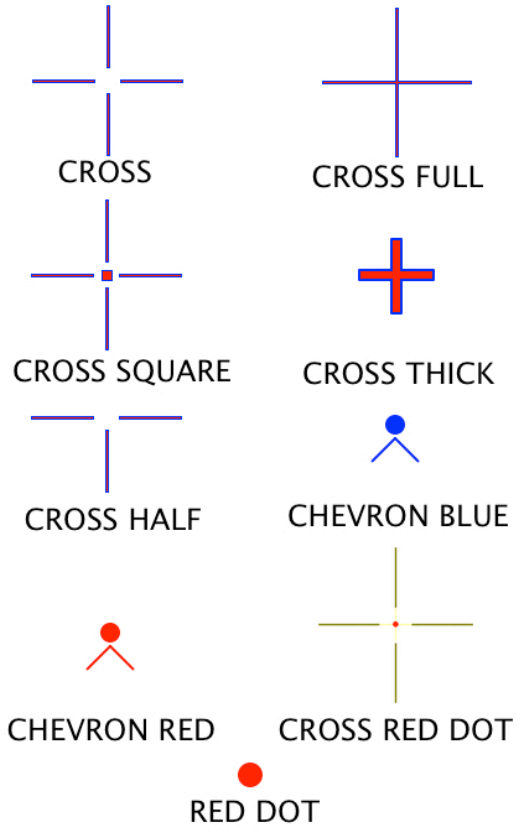
The crosshair configuration menu allows you to select the various crosshair and zoomer types of symbology inside the M1-D system. With the crosshair configuration menu you can choose different fixed and movable types of crosshairs as well as different types of zoomer brackets. The crosshair configuration menu is also where you adjust the position of movable crosshair types. When you enter the crosshair configuration menu screen it should look like this.



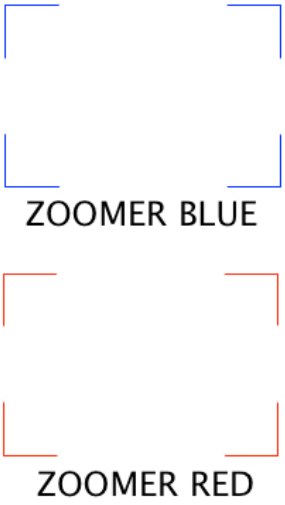
Crosshair Configuration Menu Fig. 2.2

Crosshair Configuration Fixed Type

The fixed type crosshair configuration menu allows you to select the type of fixed crosshair displayed. To change the fixed type crosshair select the fixed type menu and use the joystick to cycle through the cross hair types. The following are the available crosshair and zoomer types.



Crosshair type chart Fig. 2.3



Zoomer type chart Fig. 2.4

Crosshair Configuration Adjustable Type

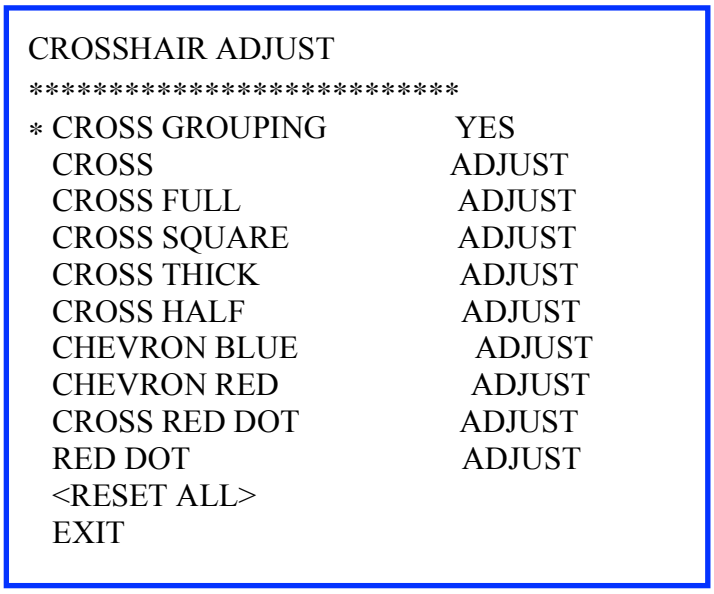
The adjustable type crosshair configuration menu allows you to select the type of adjustable crosshair displayed. To change the adjustble type crosshair select the adjustable type menu and use the joystick to cycle through the cross hair types. The following are the available adjustable crosshair types.

Crosshair Configuration Zoomer Type

The zoomer type configuration menu lets you choose the type of zoomer symbology to display on screen. To change the zoomer type select the zoomer type menu and use the joystick to cycle through the zoomer types. The following are the available zoomer types.

Crosshair Adjust Menu

The crosshair adjust submenu is accessed through the CROSSHAIR CONFIGURATION MENU. The crosshair adjust menu lets you adjust the position of the adjustable crosshair types. The various adjustable crosshairs can be set to different positions (independent of each other) or they can be grouped so that they are all locked to the same coordinates. The crosshair adjust menu looks like this.



Crosshair adjust menu Fig. 2.5

Cross Grouping

The cross grouping menu lets you set the adjustable crosshairs to be grouped or independent of each other. When grouped all adjustable crosshairs will align to the same point when you adjust one of them the others will also be aligned to that same point. To group all cross hairs set CROSS GROUPING to YES. When the crosshairs are not grouped you can set different adjustable crosshairs to different independent positions. To set crosshair positions independently set CROSS GROUPING to NO.

Crosshair Adjust Setting Crosshair Positions

The crosshair adjust sub menu allows you to set the position of the adjustable crosshair types. Once set the M1-D will remember the position until you change the position or reset the position. To adjust crosshairs independently make sure CROSS GROUPING is set to OFF. To make adjustments to the adjustable crosshair type on screen positions select the desired adjustable crosshair type with the joystick and press [OPEN].

Each adjustable crosshair type has two options, ADJUST or RESET. To adjust the crosshair position select the ADJUST option with the joystick and press [OPEN]. The selected crosshair will appear onscreen and you can adjust its relative position by using the joystick up, down, left and right commands. Once the crosshair is in the desired position onscreen press the [OPEN] button to save that position and return to the Crosshair Adjust submenu. If you do not wish to save the position press the [CLOSE] button to return to the crosshair adjust submenu without saving the crosshair position. To reset a crosshair position to the center of the screen choose the RESET command with the joystick and press the [OPEN] button.

Crosshair Adjust Reset All Submenu

To reset all crosshairs to the center position select the <RESET ALL> submenu from the crosshair adjust menu and press the [OPEN] button. You will see a screen that asks you to CONFIRM AND EXIT or CANCEL AND EXIT. Select your desired choice and press the [OPEN] button to complete the command.

4.3 Advanced Operation

The M1-D is a simple to operate multi sensor pan tilt zoom system. However, many unique advanced features are integrated into the system in order to expand on its capabilities. Advanced operation involves the use of On Screen Menu's and Advanced Preset Call Number Codes. Advanced operation allows the user to set the pan tilt auto tours, pan tilt preset positions, remote reboot the system and control the On Screen Symbology.

Setting Preset Positions

The M1-D allows you to “preset” positions of the system for either direct recall or for use in Auto Scan or Pattern Scan features. The M1-D can maintain up to 80 preset postions (Presets 0-79). Please refer to the Preset Call Number Code Table 1.5 for information on which prests are used with Auto Scan and Pattern Scan. To set a preset on typical keyboard controllers use the following syntax. [SET] + ## + [ENTER]. Keyboard controllers vary so the exact syntax may differ. On some controllers the syntax may be [PRESET] + ## + [ENTER]. Contact SPI Corp for assistance 702-369-3966.

Calling Preset Positions

The M1-D is capable of remembering up to 80 preset positions (Presets 0-79). These positions can be instantly recalled using the PELCO-D commands for CALL or PRESET. These commands are typically labelled [CALL] [PRESET] [PRE] on most keyboard controllers. The typical syntax for calling a preset postion is [CALL] + ## or [PRESET] + ##. This can vary with your keyboard controller and you may have to input ## + [CALL] or [PRE] + [ENTER]. Presets are also used for advanced preset call number codes during Auto Scan and Pattern Scan functions as outlined in the Preset Call Number Code Table 1.5. Contact SPI CORP for technical assistance with presets 702-369-3966.

Advanced Preset Call Number Codes

The M1-D utilizes custom preset call number codes to trigger advanced operation of the system. These commands can be sent to the system via Pelco-D protocol or via keyboard controller. Cades are triggered by utilizing the CALL or PRESET (depending on your keyboard) buttons. The typical syntax for entering the commands is

CALL + ## + ENTER or PRESET + ## + ENTER

Different keyboard controllers send commands in different ways so you may have to experiment with the order of the commands. You may find that ## + CALL or ## + PRESET works with your controller.

Preset Call Number Code Table 1.5

#	Function	Desc
81	Video Switch	Switch video between thermal and visual
82	Auto Scan	Scan from presets 0~39 sequentially
84	Pattern Scan 1	Pattern scan from presets 40~49
85	Pattern Scan 2	Pattern scan from presets 50~59
86	Pattern Scan 3	Pattern scan from presets 60~69
87	Pattern Scan 4	Pattern scan from presets 70~79
89	Clear General Presets	Clear all the position settings of all general presets
90	OSD On/Off	Turn on/off On Screen Display (logos etc.)
94	Remote Reboot	Reboot The M1-D
96	180 Degree Continuous Scan	Continuously scan the area 90 degrees to the right and left of the start position. (+/- 90Degree)
97	360 Degree Random Scan	Pan randomly in 360 Degrees
98	90 Degree Continuous Scan	Continuously scan the area 45 degrees to the right and left of the start position. (+/- 45Degree)
99	Call OSD	Call the On Screen Display Menu

Preset 81 Video Switch

This command is another method of switching between the thermal sensor and the visual imaging sensor.

Preset 82 Auto Scan

The auto scan preset feature lets the M1-D automatically scan between preset points that you define. The Auto Scan feature will quickly pan and tilt between each point that you have preset and then dwell at each of those points for approximately 8 seconds before moving to the next point. You can preset up to 40 points (presets 0-39) for the M1-D to stop at during auto scan. The M1-D will scan through presets you have configured in numeric order from 0-39.

Preset 84 Pattern Scan 1

The pattern scan preset feature lets the M1-D scan between preset points. This differs from Auto Scan in that the M1-D slowly and continually scans between the preset positions without stopping at any position. Pattern scan continuosly scans between positions in numeric order from low to high. Pattern scan 1 covers preset positions 40-49.

Preset 85 Pattern Scan 2

The pattern scan preset feature lets the M1-D scan between preset points. This differs from Auto Scan in that the M1-D slowly and continually scans between the preset positions without stopping at any position. Pattern scan continuosly scans between positions in numeric order from low to high. Pattern scan 2 covers preset positions 50-59.

Preset 86 Pattern Scan 3

The pattern scan preset feature lets the M1-D scan between preset points. This differs from Auto Scan in that the M1-D slowly and continually scans between the preset positions without stopping at any position. Pattern scan continuosly scans between positions in numeric order from low to high. Pattern scan 3 covers preset positions 60-69.

Preset 87 Pattern Scan 4

The pattern scan preset feature lets the M1-D scan between preset points. This differs from Auto Scan in that the M1-D slowly and continually scans between the preset positions without stopping at any position. Pattern scan continuosly scans between positions in numeric order from low to high. Pattern scan 4 covers preset positions 70-79.

Preset 89 Clear Presets

You can clear all preset positions by entering the preset 89 command. BE CAREFUL WITH THIS COMMAND. THERE IS NO CONFIRMATION. ONCE ENTERED ALL PRESETS ARE RESET IMMEDIATELY.

Preset 90 OSD On/Off

The preset 90 command turns on or off the On Screen Display symbology. By activating the Preset 90 command all symbology will be turned off (crosshair, zoomer, numeric position indicator, heading indicator, text string and logo). To turn the OSD back on press preset 90 again.

Preset 94 Remote Reboot

Sending the Preset 94 command to the M1-D will cause the system to restart remotely.

Preset 96 180 Degree Continuous Scan

The Preset 96 command tells the M1-D to pan back and forth through 180 degrees of motion. The 180 degrees of motion is 90 degrees to either side of the current position the M1-D is in when the command is triggered. It is NOT based on the home position.

Preset 97 360 Degree Random Scna

The Preset 97 command tells the M1-D to scan continuously 360 degrees in the same direction. The M1-D will stop briefly at about every 45 degrees while in this mode and continue rotating in the same direction continuously until stopped.

Preset 98 90 Degree Continuous Scan

The Preset 98 command tells the M1-D to scan continuously in a 90 degree pan. The 90 degrees of pan is 45 degrees to either side of the position of the M1-D when the command is sent. It is NOT based on the home position.

Preset 99 OSD

The Preset 99 command calls up the M1-D On Screen Display Symbology menu. This menu allows you to modify the individual elements of the M1-D On Screen Display Symbology.